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UNITED STATES DEPARTMENT OF AGRICULTURE
Bureau of Entomology
Washington, D.C.

July 15, 1929

Forest Entomology Brief 67.

THE IPS ENGRAVER BEETLES

Character and Extent of their Damage

Nearly every year throughout the Southeastern and Gulf States, in summer and early fall, many pines die infested by the Ips engraver beetles. The dying of these trees is often wrongly attributed to the ravages of the destructive southern pine beetle (Dendroctonus frontalis Zimm.). The Ips beetles normally breed in green felled timber, fresh pine slash, or pines in a dying condition. When, however, large numbers of trees have been affected by storms, fire, drought, and other mishaps or untoward conditions and thus materially weakened, these insects may increase to such proportions that they become a menace to healthy timber. Sporadic outbreaks often occur in pine stands when the condition of the trees is abnormal from such causes, and either the tops of trees or entire trees are killed. Summer logging also creates favorable conditions for the breeding of these insects, and a sudden cessation in a large-scale operation is especially dangerous.

The Ips beetles are attracted to places where there has been summer cutting, or where there is freshly sawn lumber, or to other locations where a strong pine odor is noticeable, as around frame buildings under construction and around turpentine stills in operation. Turpentined trees weakened by too severe working are subject to attack. When the beetles have increased until they are present in large numbers, and when no slash, logs, or weakened trees are available for them, they will attack healthy trees and cause considerable injury.

Much of the direct damage to the living healthy trees is caused by the adult beetles. These beetles bore through the outer bark into the inner soft layers and here they construct narrow channels or egg galleries that engrave the wood. The young grubs do not enter the wood but the dying trees attract wood-boring beetles, the grubs of which injure it in a short time.

Evidence of the Work of Engraver Beetles

The first evidence of attack by engraver beetles is the presence of pitch tubes or spots and reddish boring dust, or "sawdust," on the bark, or a slight change in the color of the foliage.

A close examination of these pitch tubes or pitch spots will indicate the point of attack, a tiny hole like a shot hole in the bark. Removal of the bark at one of these points will usually reveal the adult beetles at work in their longitudinal or star-shaped egg galleries and the tunnels of the young grubs extending more or less at right angles as far as 2 or 3 inches from the egg galleries of their parents.

Three Kinds of Ips Beetles

Three species of Ips beetles are commonly found on southern pines and the habits of all of them are quite similar. The smallest, a tiny, brownish-black, cylindrical insect nearly an eighth of an inch long, confines its attack to the top of the trees and to the upper branches. Another, also brownish-black to black but slightly larger, works only in the middle and upper portions of the tree. The third and largest beetle, similar to the other two in general appearance but nearly a fourth of an inch long and either reddish brown or shiny black, prefers to work in the lower trunk and larger portions of the tree. Ips beetles of all species can be distinguished from the southern pine beetle by the peculiar shape of their bodies. The rear end of the body looks as if it had been abruptly cut off and bears a number of tiny blunt spines or projections, whereas that part of the body of the southern pine beetle is smooth and rounded.

Seasonal History and Habits

The winter is passed beneath the bark of infested logs, slash, and trees, and during this inactive period eggs, larvae or grubs, pupae, and adult beetles may be found. The insects are active from the first warm days of spring* until cold weather and there is even some activity during mild winter weather. The first adults emerge early in the spring and seek suitable material in which to construct their egg galleries. After about 10 days the eggs hatch, and the young grubs tunnel to a distance of 2 or 3 inches from the egg gallery, and more or less at right angles to it. By the time they have done this, or in from three weeks to a month, they are full grown, whereupon they pass through a short resting stage between the bark and the wood and emerge as adult beetles through "shot holes" in the bark similar to those by which their parents entered it. During midsummer a generation may be completed in from 30 to 40 days and a new one begun. When summer seasons are long and suitable

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* In the vicinity of Asheville, N.C., this is usually from the middle of April until October. In the Gulf States the beetles are active from March until December.

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breeding places are available, these insects increase with great rapidity.

Remedial Measures

As explained before, the Ips engraver beetles rarely attack trees that are not dying or severely weakened from some cause, consequently direct control measures have not been generally recommended. Invariably, when conditions return to normal, outbreaks of these insects disappear.

No control measures are recommended for infested trees occurring singly or in small numbers, since such trees usually have already begun to die as the result of injury inflicted by some other agency before they are attacked by the Ips beetles. Special attention should be paid to the elimination of those conditions, mentioned in the opening paragraph of this brief (page 1), which might serve as an attraction to the Ips beetles. This is especially important under forest conditions where, during years of drought, blowdowns, severe fire, etc., large numbers of trees are involved.

Greater returns will be realized from large-scale salvage operations that are inaugurated at the onset of infestation after a blowdown than from the control of infestations which have been running over a long period of time. The elimination of fire from tracts of turpentined timber will aid materially in preventing the trees from becoming weakened and thus rendered susceptible to attack by Ips beetles.

Under ordinary logging conditions slash disposal is not necessary, but where there is a sudden cessation in large-scale cutting operations it might be advisable to destroy the broods breeding in the slash, thus protecting the remaining standing healthy timber. This can be accomplished by burning or barking. Logs or large slash from summer cutting operations should be barked within two to three weeks of the time the trees were felled, in order to destroy the broods before they emerge.

There is another reason why rapid utilization is necessary where logging has been carried on during the summer months. Wood borers will attack and enter the sapwood of summer-felled pine logs in from two to three weeks' time. Where summer logging is not necessary the cutting of timber should be deferred until the fall and winter months.

For detailed advice address the Bureau of Entomology Field Laboratory, 612 City Hall, Asheville, N. C., or the Division of Forest Insects, Bureau of Entomology, U. S. Department of Agriculture, Washington, D. C.

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